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CONTENTS

Hummingbirds in the Garden by Marie Hoff Cox..... 113
Glamorize Your Fuchsia by Annabelle Stubbs..... 115
Natural Insecticides (Part I) by Larry Sisk..... 116
Gerberas by Barbara Jones..... 118
Petunias..... 119
About Yucca Moths by Marie Hoff Cox..... 120
The Yucca by Helen V. Witham..... 121
Collecting Strombocactus Disciformis by Jim Stalsonburg.. 123
Gardening the Continental Way by Rosalie Garcia..... 124
Southern California Exposition..... 126
Walter Andersen by Grace T. Brophy..... 128
Grow Macadamias by Lois E. James, Ph. D..... 131
Now Is the Time by Nibby Klinefelter..... 136
Book Review..... 137
Dry Your Own Flowers by Beverly A. Kulot..... 138
Sing the Blues by Josephine Gray..... 140
The Plant World (I) by Paul C. Hutchison..... 141
Garden Club Directory..... 142

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Selasphorus rufus (Rufous Hummingbird) on orange blossoms.

HUMMINGBIRDS

IN THE GARDEN

Marie Hoff Cox

Illustration by Marilyn Hoff Stewart

HUMMINGBIRDS ADD a sparkling touch to the garden as they buzz from flower to flower, their iridescent feathers glittering like sequins. All of the 319 species of hummingbirds are found exclusively in the Western Hemisphere, mostly in the high mountains of tropical and subtropical South America where there is a great abundance of flowers.

The long association of these birds with flowers had led to the development of unique features in some flowers which have made them totally dependent on hummingbirds for pollination. Such flowers are generally tubular, the nectar being too deep for bees to reach. They are usually red or orange in color. They are different from the "bee flowers" which are intended to be sat on and crawled about on for pollination.

Some hummingbird flowers such as the Agave, or Century Plant, are "forehead pollinated" by hummingbirds, the pistil and pollen-laden stamens arching out to "powder" the hummingbird's head while it feeds. Other hummingbird flowers such as the Fuchsia are "chin pollinated". The long sticky pistil rubs against the bird's chin picking up pollen grains which will remain there and be deposited on another flower of the same species. Bumblebees also visit Fuchsias collecting pollen on their legs. Since the pistil hangs down beyond the bee, the pollen covered legs are never in a position to touch the tip of the pistil. Bumblebees cannot, therefore, assist in the pollination of these flowers, though they do take nectar and pollen. Similarly, hummingbirds seldom assist in the pollination of "bee flowers" even though they may take honey from them.

An excellent book on the structural relationships of California species of wild flowers specifically adapted for hummingbird pollination is HUMMINGBIRDS AND THEIR FLOWERS by Karen A. and Verne Grant published by the Columbia University Press.

Hummingbirds need to feed from many flowers of high nectar yield every day. It has been said that a hummingbird needs the equivalent of nectar from 1,022 Fuchsia blossoms per day to maintain its very high metabolic rate. Hummingbirds have a normal body temperature of around 105° to 110° F. Because they do not feed at night, some hummingbird temperatures drop to as low as 65°F. or about air temperature to conserve body heat.

Hummingbirds also eat insects to add protein to their diet. In Spring, protein is an important part of the young bird's diet, and in Winter, it provides a substitute for nectar when flowers are scarce. It is not unusual to see hummingbirds taking vinegar flies in flycatcher fashion around fruit trees.

To encourage hummingbirds to stay all year one should provide a feeder containing a solution of one part sugar to four parts water, slightly colored red with food coloring to attract the hummingbirds. The opening should not be too large since these feeders also attract finches, orioles, bees, and wasps. It must also be mentioned that the solution cannot be made with honey, since this causes a fungus to grow on the birds' tongues, and they eventually die of starvation when the tongue rots away. Once a bird decides to stay through the Winter, the feeder must be maintained or the bird will also die of starvation. If more hummingbirds are desired, one must remember the daily requirements needed per hummingbird and increase the amount of sugar water available. Mr. O. L. McPherson in Idyllwild reports that he uses about 600 pounds of sugar per month during the summer and feeds between 1500 and 2000 hummingbirds per day.

As one moves north away from the tropics and into North America, the number of flowers decreases, and the number of species of hummingbirds also decreases, the species being mainly migratory in the Western mountainous areas of the United States. The Ruby-throated Hummingbird is the only species found in the eastern United States, and there are only seven species of hummingbirds found in California, most of which stay while the flowers bloom and return to Mexico

Marie Hoff Cox has been on the board of the San Diego Audubon Society since 1966. She and her sister Marilyn Hoff Stewart have degrees in Biology from San Diego State. They have done illustrations for a book on "aquatic insects" for a forthcoming publication.

Calypte anna (Anna's Hummingbird) showing head pollination on Tecomaria capensis (Cape Honeysuckle)

for the winter.

In southern California the most common hummingbird and the one most likely to spend the winter is the Anna's Hummingbird. It is the least particular and will visit many kinds of flowers, even gladiolus which is mainly wind pollinated. The male Anna's is bright green with a flashing red throat and crown. The female is also green but has only a touch of red on the throat. As early as January these hummingbirds begin courtship. The male sits in his territory and sings his squeaky little song. When a female enters his territory, he rises high into the air, almost out of sight, squeaking away at his song. He then dives with lightening speed toward the earth, pulling out at the last minute with an explosive "pip" to hover in front of the admiring female. After mating, the female flies off to build her nest. She makes a tiny cup of cottony plant down, held together with spider web, and covered with lichens. She lays two miniature white eggs and tends the nest by herself. The male maintains his territory and may mate with several other females. They are quite easily tamed and will come to a feeder held in the hand.

The Costa's and Black-chinned Hummingbirds also nest in California. The Costa's has a purple throat and forehead and is a bird of the chaparral. It will take nectar from flowers closer to the ground such as from the penstemons. The Black-chinned Humingbird has a black chin and purple throat and, although preferring red flowers, will take nectar from white flowers more frequently than the other hummingbirds.

The Rufous and Allen's Hummingbirds are bright orange brown hummingbirds with ruby red throats; the only difference between them is the green back of the Allen's. These two species nest farther north, the Rufous breeding north to Alaska, the Allen's nesting mainly along the foggy northern California coast and on Santa Catalina Island. Both species winter in Mexico and are only migrants in San Diego. The Rufous migrates through mainly in the Spring taking an alternate route through the mountains in the Fall. The Allen's passes through San Diego in the Fall, taking an alternate route in the Spring. The Caliope Hummingbird also migrates through San Diego but nests in the mountains from Baja California north into Canada. The Broad-tailed Hummingbird is found in some parts of eastern California.

Some favorite garden flowers of hummingbirds are the Bottle Brushes, Grevillea, Agave (Century Plant), Aloe, Fuchsia, Columbines, and Honeysuckles. A blooming Eucalyptus may fairly swarm with hummingbirds. The majority of hummingbird flowers are red as a result of evolutionary convergence--that is, it is to the advantage of an exclusively hummingbird-pollinated plant to be easily recognized as such, and the color red has been chosen through centuries of selection. Other colors also found in hummingbird flowers are yellow, orange, purple, and white. The preference of hummingbirds for the color red is amusingly illustrated by a story that Mr. Frank Gander tells. One day he was having a "red tag" sale in his nursery and had marked many of his plants with red tags. That day the hummingbirds which were accustomed to passing through his nursery in search of flowers were busily going from one red tag to another. They did not give up until they had checked every one. Mr. Gander has many humming - birds that visit him at the San Diego Audubon Society's Silverwood Wildlife Sanctuary where he is now resident naturalist. He says one of the most beautiful sights is to see a Costa's Hummingbird with its purple throat and crown feeding at a purple Penstemon.

glamorize your FUCHSIA

Annabelle Stubbs

SOME OF THE GREAT POSSIBILITIES of fuchsias are often overlooked because of the tremendous popularity of the large double basket types. These are certainly worth cultivating and training, but there are also the much less demanding uprights which can be trained in a comparatively short time with not as much effort.

A fuchsia planted in a large pot and supported on a fan trellis from four to six feet tall can easily become the center of interest for the entire patio or garden. Some of the smaller blooming singles are often very fast growing and bloom prolifically for a long period of time. Many of these will take full sun in San Diego and along the coast. By growing a plant in this way it may be 'in the spotlight' when it is at its peak and moved to a less prominent position when it has been pruned. There are many double flowered bush types that will grow very well this way, also. The trellis supports the branches that otherwise may become loaded with blooms and break or bend out of shape.

The method is very simple. Partially fill a large tub or five gallon can with your potting mix. Choose one or two gallon size plants that are growing actively. The plants should be well branched with three or four main branches low on the plant. Place your plant or plants in the mix so that there is about 2 1/2 inches between the soil level of the plant and the top of the pot. This space is important for your watering. Fill in around the plant or plants so they are setting firmly in the new mix. Insert the trellis in back of the plants. Be sure to push the trellis in back down to the bottom of the container. Now take your leaders (branches) and distribute them evenly on the trellis. Tie with plastic ties. (The use of wire ties has been discontinued as a branch can be almost cut in two.) Water the plant carefully and thoroughly. Continue to tie up the branches as they grow. When the leaders reach the top of the trellis pinch out the growing tips. Keep the tips of the lateral branches pinched, also. Feed and spray regularly, and in a remarkably short time you will have a blooming specimen to be proud of.

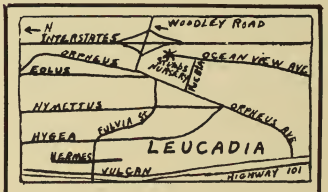
Another very fast growing specimen is an upright tree. Fuchsia trees, or "Standards" are usually made with trailing types. The framework is developed the first year and it is completed the second year, or it is grown with a wire support. With a suitable fast growing upright species the framework is not necessary, as the wood is strong enough to hold the branches erect. A young plant should be selected with one strong leader. Remove other stems. This is potted into its permanent size container. Then insert a strong stake approximately six inches shorter than you wish the height of your tree to be. Tie the plant to this stake and continue tying about every foot. Remove all branches that form along the trunk, but not the leaves. When the plant is near the top of the stake, do not remove the last three or four sets of branches. When it reaches the top, pinch out the growing tip. Now pinch the tips of the branches as they grow, to develop the top of your tree. This method works very well with the varieties "Erecta Novelty," "Gypsy Queen," and several of the 1971 fuchsia introductions such as "Lunar Light," "Eternal Flame," and "Nancy Lou."

A lovely specimen can be made by using a small erect growing fuchsia as a tree. Stop the plant by pinching at two or three feet and allow it to branch from the top three or four sets of leaves. A small growing bush that is carefully shaped and pinched will then produce a beautiful little tree. This size can be kept for several years in a 2 1/2 gallon pot. It then should be moved to a larger pot or be root pruned if you wish to keep it in the smaller pot. Varieties suggested for this treatment are "Little Beauty," "Jingle Bells," and "Alice Hoffman." Be sure to stake these small trees, also, as they are less likely to break when staked and securely tied.

Right now tip pinching, watering, spraying, and fertilizing should be on a regular schedule to bring your plants into 'Show' condition.

Archilochus calexandri (Black-chinned Hummingbird) showing chin pollination

Annabelle Stubbs is a member of the local and California National Fuchsia Nursery in Leucadia.



Stubbs Fuchsia Nursery

770 Ocean View Ave. 753-1069
Leucadia, Calif. 92024

Natural

I. Antibiotics; Sugar;

ALTHOUGH ECOLOGY has been here as long as we have, it is being discovered for the first time by many. This new interest is good. It increases the chances for doing something about the universe and about the protection of the quality of our environment.

Concurrently, there has been an upsurge in the study and use of natural insect controls and fertilizers in gardens and on farms. All of a sudden there seems to be rediscoveries of many natural insecticides. True, some of the cures might be considered worse than the bite, but the subject opens up a wide range of folk lore. You might call the reported methods granny tales, or dismiss them as pure superstition. However, some of these "Nature's remedies" have scientific support, and good results can be verified by the experimenter. For instance, quite a few of these natural methods have been tried in a San Diego dahlia garden--with results: Miscellaneous, good, and don't know --and others are currently being studied or will be tried during this year. These experiments include use of sugar to control nematodes; planting garlic, onions, and marigolds to discourage aphids, nematodes and spider mites; using a concentrated spray of epsom salts and soap suds for black aphids and scale in citrus trees, and for general cleanup, plus use of the standard commercial organic insecticides. In addition to the experimenting, it's an interesting hobby sideline to combine with dahlia growing and gardening, and educational as well, to research what others have tried and written about.

There is the story about Troy Shipman, 86 year old farmer of National City, who is devoted to organic practices. He advocates spraying vegetable crops with pepper sauce and garlic water. Incidentally, he also uses old magazines for garden fertilizer and says his product increases his vegetable yield five-fold. As for this latter, he tears up the magazines and soaks them in water to which blood-and-bone fertilizer and fish emulsion are added. At the end of two weeks, the potion has soured and decayed just right and is buried between the rows of garden plants. He says the magazines thus prepared are especially good for earthworms. Mr. Shipman also moistens his garbage with the same mixture to bury it in his compost pile.

But, natural fertilizers and soil improvement are a different and large subject. Some of the natural soil additives also are used as insecticides, such as wood ashes, bone meal, sulphur, and epsom salts (magnesium sulphate).

Last year there was an interesting story in The Christian Science Monitor, written by Helen Frank Collins, who also likes to combine Nature's help with her gardening. She told about planting marigolds all around the edge of her garden, and all along the row of marigolds she spread a one inch wide strip of bonemeal, which, she said, smells so bad that it repels rabbits, squirrels, and other varmints. Even her 131 pound dog won't cross the strip. Some insects and garden pests don't mind the smell, making other procedures necessary, Miss Collins wrote.

The Monitor has published many articles over the years reporting on uses of Nature's gardening aids. Their garden writer, Millicent Taylor, has written some especially good articles on companionate planting. Some of the information here comes from a clipping file of Miss Taylor's writings. Some comes from the "Encyclopedia of Organic Gardening" and other publications of Rodale Books, Inc. of Emmaus, Pennsylvania, specialists in organic practices. Still other information comes from experimenting in a San Diego dahlia garden.

Larry Sisk is a retired newspaperman and has been a dahlia hobbyist for many years.

Insecticides

Onions & Marigolds; Garlic

Larry Sisk

EXPERIMENTS

Antibiotics: One experiment with negative results was undertaken several years ago when the gardener obtained a quantity of discarded antibiotics from a doctor's office. They were planted, both incapsul es and in solution, around several dahlia plants showing definite signs of virus infection. Instead of getting better, the plants seemed to get worse and finally were pulled up and destroyed.

Sugar: Another experiment was the use of sugar for nematodes: There were no nematodes in the test spots and pots at the end of the season, but admittedly there might have been none anyway.

Use of sugar was being tested about the same time by the U.S. Department of Agriculture which finally reported that results were favorable, although the cost of the amount of sugar required made the method too expensive. (In the San Diego experiment one pound of sugar was used in a bushel of potting soil, or one tablespoon to the four inch pot in which cuttings and potroots were grown. The same formula called for a cup of sugar mixed in the soil in the hole with each test dahlia plant in the open garden.)

Onions and Marigolds: In the small vegetable garden adjoining the dahlias, concentrated plantings of onions in spots where tomatoes had had root trouble, and marigolds planted with squash and lettuce were believed to have been helpful.

Garlic: Another experiment of last year, being repeated this year, is the companionate planting of garlic with dahlia varieties that seem most susceptible to nematode attacks. The dahlia variety, First Lady, for example, will show up with nematodes if there are any around, as demonstrated in this garden over a number of years. Last year, a clove of garlic was planted on two sides of each stake with each of five dahlia roots. When the clumps were dug there were no signs of nematodes, but one clump was destroyed because of crown rot. Most of the garlic survived and was transplanted to join the garlic planting around the drip line of an avocado tree--just for luck. The garlic was planted with a few other dahlia varieties with similar results and gave enough confidence for the test to be repeated this year.

Use of garlic as a powerful natural insecticide has plenty of scientific backing. A scientist at the University of California at Riverside reported that garlic wiped out 100 per cent of five species of mosquitos in laboratory tests. Mosquito larvae were exposed to minute doses of garlic extract, and it acted as a biological control. The garlic smells like a certain algae on which the larvae feed.

Speaking of garlic, other uses have been reported. One recipe calls for boiling a half-pound of garlic tops in two gallons of water and applying it as a general insect repellant. Another calls for grinding cloves of garlic, extracting the juice, and using it in a concentrated spray.

Closely akin is the use of dried peppers. Boil or soak dried and ground Mexican hot peppers, jalapeños, or chiles, about half a pound in two gallons of water. Pepper sauce as a general spray is supposed to be excellent against aphids and other sucking and chewing types of insects.

Organic Magazine recommends use of a pepper spray, pods ground and mixed with an equal amount of water, as deadly against caterpillars and tomato and cabbage worms, in addition to the use as a general spray. The magazine also reports that a sure insect killer can be made by grinding shallot onions in a food chopper, mixing with an equal amount of water, and straining through cloth.

Other remedies, particularly against aphids, include various mixtures of sour buttermilk, strong vinegar, or water in which tobacco has been soaked. Cold water in a strong fine spray early in the morning is recommended to dislodge aphids and other crawlers, as well as to wash off accumulations of night moisture which some believe encourages mildew.

(continued next issue)

GERBERAS

Barbara Jones

WANT TO LEARN ABOUT GERBERAS? The person to contact is Norman Thurman on W. Lilac Road in Escondido, and that is where we went to obtain the information for this article.

The Gerbera, named for a German botanist, Gerber, is a native perennial from the fields of Transvaal in South Africa. Commonly called Transvaal Daisy or African Daisy, it has long been a popular cut flower in Europe and is becoming popular here as both a plant and as a cut flower. Gerberas can be obtained in any form -bare root, seed, cut flower, lining stock (seedlings), or flowering plants.

The Gerbera is a sun loving plant and can stand considerable cold of short duration. The clump will not die, but the blooms will be retarded by cold. Gerberas need lots of water but must have good drainage. Seeds should be started in flats and planted in beds or containers when the seedling has three leaves. The soil needs no extensive preparation, but plants must have heavy feedings of Rose Food or any good, well balanced food during heavy bloom time. (Once per month in heavy soil and twice per month in light soil.) When transplanting, one must be careful to keep crown above the soil surface.

Gerberas make exceptional pot or tub plants. Mr. Thurman says that this is the most successful way to grow them as they are subject to many diseases. A sterilized, prepared soil mix is recommended. The eight inch pots which are available at nurseries are six month old plants and have their first flower. By the time the plant is one year old, the clump will have continuous bloom. (About 75 blossoms per year per clump.) The larger the clump, the more flowers. A tub specimen will do well and bloom continuously for three to five years with feedings two times per month of a slow-release, balanced food. When the clump becomes large, part of the foliage should be ripped out to allow air and sun to penetrate. Dividing is uncertain, but it may be successful if done in February and March. Remember, they need lots of water and good drainage and sunshine.

The flowers which rise on graceful 18" stems from a rosette of lobed, 10" long leaves, come in many exquisite colors. (No blues as yet.) The smallest are 3-4" in diameter and the large reach to 7-8" across. There are singles, doubles, crested, and variations. The petals are fine, broad, or thread-like and radiate out in almost a perfect circle. Some of the new ones have dark centers. The most common are singles, the rarest are the thread-like powder puff forms. A flower will last on the plant from two to three weeks. One plant has one color flower. The color may vary slightly at different times of the year because of the change of density of natural light. A change of fertilizer can cause a very slight color change, too. A bit of blood meal from time to time will make the colors more vibrant.

Flowers with coarse, broad petals make better cut flowers. If they are arranged in warm water they will last for from seven to ten days. (A floral preservative will help, too.) Flowers should never be cut from the clump but should be broken off with the fingers as low as possible. This helps to prevent diseases from entering the plant.

Lavenders, chartreuse, apricot, or flame, whatever your decor, there is a Gerbera to match.

Gerberas are wind and bee pollinated, but doubles must be hand pollinated as bees cannot get to the stamens.

Norman Thurman of Thurman's California Hybrids is the largest commercila gerbera grower in the world.

PETUNIAS

PETUNIAS HAVE LONG BEEN A GARDEN FAVORITE but are often overlooked by new gardeners. They flower heavily over a long season, usually a minimum of 3 to 4 months, and perform better than almost all other annuals. Plants are usually set out in early spring but can be planted until early August and still make a colorful show.

Petunias can be used in almost any sunny spot in the garden where one wants a bright splash of color. Medium or large beds or border plantings of one or two colors give the most striking effect. Ten plants will quickly make an eight to 12 foot border of color. Large single varieties are well suited to beds and borders. For showy effects at night the white varieties reflect even a small amount of light. A new group of carnation flowered doubles called "Delights" produce a heavy crop of flowers in mass plantings.

Petunias can provide color in front of permanent shrubs and are especially useful in new gardens to fill in bare spots between small shrubs. Any spot a foot or more in diameter with at least a half-day of sun is sufficient.

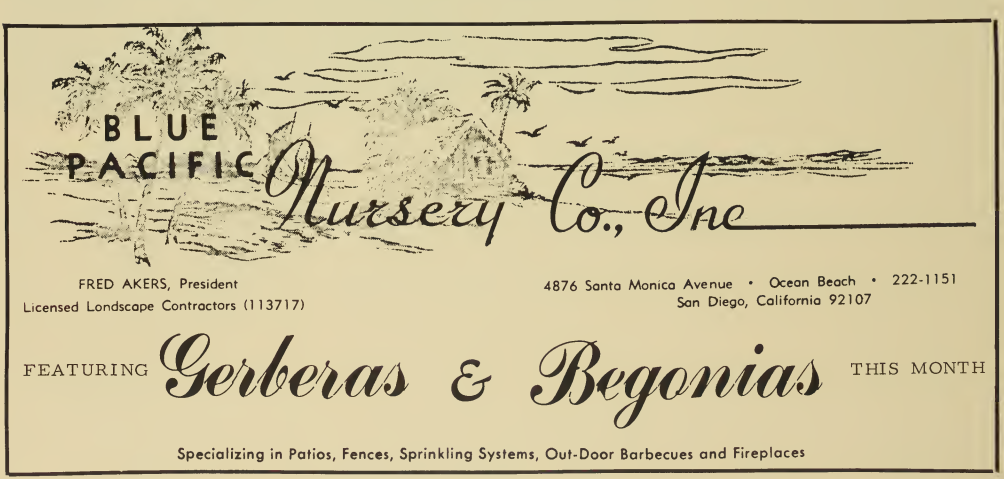
Container gardening is becoming more popular all the time. Petunias are widely adapted to a large variety of planter boxes, tubs, urns, and hanging baskets. The large fringed double varieties are best suited to containers or other areas where the individual flowers can be admired. Many petunias are becoming available in pots, already in good bloom, to achieve immediate effects in containers and for late planting.

How to grow

Petunias will grow well with minimum care even in poor soils. A balanced, organic fertilizer should be added to the soil when the plants are set in the garden. Peat moss or compost is helpful, too, although not necessary. Soil in containers should be porous so water flows through easily. Two or three light applications of chemical or liquid fertilizer can be made during the summer to insure continued good bloom. Once the plants are established, they should be watered deeply at one or two week intervals, depending on the weather. Excessive water and fertilizer or too much shade will reduce flowering, too. (Container plants should be watered and fertilized more often). Petunias have practically no pest or disease problems except hungry snails and slugs which are especially fond of newly set out plants. Some gardeners prune plants back in midseason to encourage a heavier bloom.

Try some. You will be pleasantly surprised!

B. J.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Marie Hoff Cox

Photo by Betty Mackintosh

MANY PLANTS HAVE FLOWER STRUCTURES that only specific birds or insects can pollinate. Some of these relationships are so complex that the plant would become extinct if the specific pollinator were removed. Such a relationship exists between the Yuccas and the Yucca moths. The female Yucca moth runs rapidly over the Yucca blossoms collecing pollen with her long, curled, spinelike mouth appendages. Then, after inserting her eggs into the ovary of another flower, she places the pollen carefully on the stigma of that flower to ensure its pollination and the development of the seeds. Since the larvae feed on the seeds, this ensures that there will be food for the larvae. And, since there are more seeds than the larvae will eat, this ensures that there will be fertile seeds to produce more Yuccas for the Yucca moths to feed on the next year.

Of the four species of Yucca found in California, only the Mojave and Lord's Candle Yuccas are found in San Diego. There are two species of pollinating Yucca moths which visit these. One is about a quarter-inch long and blackish in color, while the other is half that size and of a light grey coloring. They resemble clothes moths to which they are not too distantly related.

Yucca whipplei on old Viajes Grade.

There is a sequel to this story. There are bogus Yucca moths which lack the modified maxillary palps used to collect pollen and which, therefore, cannot pollinate Yuccas. These moths lay their eggs in the green stems of the Yucca flowers before they bloom. Unlike the larvae of the pollinating Yucca moths, which drop to the ground and pupate in the soil, the bogus Yucca moth larvae pupate in the drying stems. When the Yucca flowers have gone to seed, the numerous pupal skins of the bogus Yucca moths can be seen still attached to the dry, woody flower stalks where they wriggled out of the stems before releasing the adult moths. Without the pollinating Yucca moths there would be no Yucca plants. And without the Yucca plants there would be no bogus Yucca moths. And no pollinating Yucca moths!

THE YUCCA

Syrup to String, or Simply Spectacular

Helen V. Witham

Photos by Anne Galloway

IT HAS BEEN CALLED by many names, this, perhaps the most conspicuous plant of the arid Southwest "Quiote", for one, from the ancient Aztec word quiotl. Not that the Aztecs used this name for yuccas--quiotl was their name for the stalk of the century plant, a close relative of the yucca. Early explorers, coming up from Mexico and seeing the yucca plants with their similar stout flower stalks, called them by this Aztec name. Since no other name for the plant was known to them, they did what travelers have always done--named it after some plant that grew at home. If the astronauts had found round orange-colored fruits on the moon, these fruits very likely would have been called "moon oranges," regardless of what the insides looked or tasted like, or what kind of plant bore them.

We are more familiar with the yucca's later names--"Joshua Tree," "Spanish Dagger," "Adam's Needle," "Spanish Bayonet," "Our Lord's Candle;" and there is always someone around who refers to it as a palm or cactus.

Even the scientific name *Yucca* was given to it by mistake, (yucca was the West Indian name for manihot--the cassava or tapioca plant), but we need not concern ourselves with that long gone error. The name is now *Yucca*--short, easy, and botanically correct, even though it got there by a fluke in the first place.

There are about 30 kinds of yuccas, all native to either the West Indies or North America. Only four of these are native Californians, while others are found across the southern edge of the continent, to the very shore of the Atlantic. Some species have been cultivated for hundreds of years in gardens around the Mediterranean.

The Joshua Tree is the largest of the California yuccas. Botanically speaking, it is *Yucca brevifolia*--short-leaf yucca, a name aptly descriptive, since it has leaves less than a foot long, while our other species have leaves up to four feet in length.

Helen Witham is a native of San Diego County and has always been interested in plants and wildflowers. She is the assistant Curator of Botany at the museum of Natural History.

Yucca seeds are flat, black, and tightly stacked like pancakes into 3 chambers of the capsule.

Yucca whipplei. It takes 7-10 years for this plant to reach full flowering stage and to send up the tall flowering stalk as its last magnificent performance. The dried stock stands for many months after the seeds are ripe.

At one time, during the late 1800's, a factory was established north of Los Angeles for the processing of Joshua Trees into paper pulp. The resulting paper was not only costly but of inferior quality, and a very good thing it was! Considering the limited numbers of mature plants as well as the extremely slow rate of growth, we would soon have been out of Joshua Trees, and then what would the makers of paintings and post cards have done?

The tough fibers found in all the yuccas made them invaluable to early Southwestern peoples. Sandals several thousands of years old have been found in a dry cave in New Mexico. What were they made of? Yucca fibers.

Roots, stems, and leaves all contain long, strong fibers. These have been used for centuries in the manufacture of twine, rope, carrying nets, hats, hairbrushes,

Yucca schidídera.

sandals, and, (since the introduction of horses), saddle blankets. The whitest thread is made from *Yucca whipplei* common here in San Diego County, where it decorates our hillsides in spring and early summer with its thousands of white bells on tall stalks.

In preparing the fiber, leaves are first soaked in water, then pounded with a wooden mallet to free the fibers from the fleshy parts. The fibers are separated out by plunging in water. Many different kinds of yucca have been used for fiber, but not often the Joshua tree, because its leaves are so short compared to others.

The strings, of course, are indigestible, but the flowers are good to eat. Developing buds and flower stalks are very rich in sugar. Southwestern Indians used to roast pieces of these stems in pits lined with hot rocks. The baked goodies were eaten hot or cold or dried for future use. It is said that these stalk sections dried into a rich sweet, similar in texture to dates. Sometimes syrup was made from the baked stalks. Buds and flowers were also boiled and eaten as a vegetable. The petals make quite tasty nibbles.

Are you wondering how many kinds grow wild here in San Diego County? Two only. Some other kinds of plants resemble yuccas in having tall flowering stalks, or sharp-pointed leaves in rosettes, but when the real yuccas stand up, we see only two: *Y. whipplei* and *Y. schidídera* The former is the glamorous one, with its panicle of white flowers rising 6-12 feet from a rosette of narrow gray-green leaves. The whole plant dies after flowering. Not a plant for the impatient gardener--it may take ten years to reach the flowering stage. These are widespread throughout the foothills and lower mountains of Southern California and northern Baja California. Also, they are seen in many parks and gardens where they make striking accents and keep people from cutting corners.

Our other yucca is a larger plant with a definite trunk, often branching several feet above ground level. Its leaves are green spears with curling threads along the edges. Leaves are rigid, one to two inches wide, and two to three feet long. Flower buds are brown or purple outside, creamy white inside. The flower cluster appears to be nestled in the center of the rosette of leaves. This plant does not die after flowering, but sends out one, or sometimes two new shoots at the base of each drying flower stalk. *Y. schidídera* is common from the coastal bluffs to the desert edges, except in the higher mountains.

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Collecting Strombocactus Disciformis

Jim Stalsonburg

TURNING OFF THE MAIN ROAD at San Juan Del Rio in the Mexican state of Queretaro, we head east by northeast on the dew of a humid August morning. The sun in brazen battle dress is tempered by the lush green of grassy fields that stretch in endless cortege to the slopes of the Eastern Sierra Madre. The distant peaks look like writhing fingers tearing madly at the wounded and bleeding sky in a vain attempt to subdue its fiery adversary.

Channeled by rockwall fences, the roadway sways gently past large specimens of *Stenocereus marginatus* standing like molten monoliths in the morning sun. *Myrtillocactus geometrizans* dot the landscape resembling huge candelabra flickering with the final glow of a nocturnal vigil.

Immense tree-form *Opuntias* and soft willowy billows of foliage nestle close to the base of Peña Bernal, a solitary spire which stands as an omnipotent sentinel over this sleepy sanctuary. Peace and tranquility are abundant.

The road twists upward through the rolling foothills. Golden outcroppings of *Coryphantha erectra* and snowy mounds of *Mammillaria parkinsonii* give bizarre contrast to the rich hues of the surrounding flora.

The long streaks of the earlier aurora transform into an intense blaze of staccato fury. The once proud summits are seemingly reduced to blunted shapeless knobs of twisted and blistered debris. One's progress is now marked only by a ribbon of scorched earth hanging motionless in a cadaverous void.

It is here, some 70 kilometers from the pueblo of Tequisquiapan, in the shale high on the cut-bank of the roadway, that the elusive STROMBOCACTUS DISCIFORMIS quietly seeks refuge under the sparse cover of wizened shrubs. Even with precise measurements to the actual spot, the experienced collector could easily miss this prize. The flat chiseled tubercles closely resemble the rubble of the shale, and the color of the body blends in monochromatic association with the terrain.

It is the little white flower, that openly flounts the authority of the raging ruler in his noonday kingdom, that attracts the eye of the collector like the matador's cape captivates the bull. As you gaze down on this thrilling sight you may be moved to say, "Ah, little one, let me take you away from all of this!"; with twinkling eyes and wry little smile, the plant might be heard to answer, "I thought you'd never ask!"

Strombocactus (strom-bo-kak'-tus) comes from two Greek words meaning "top-shaped" cactus. It alludes to the confirmation of the plant with its rounded body and tapering tuberous roots, much like that of a turnip. *Disciformis* (dis-ci-for'-mis) refers to the disc-shaped appearance of the plant as it lays round and flat, almost withdrawn in its native soil.

Usually the ash-green body attains a size of 2 1/2 inches across, sometimes larger in cultivation. The apex or growing point is somewhat depressed with a tuft of fine bristle-like spines surrounding it. These harmless spines are borne from shingled or scale-like tubercles, and soon become bare and papery in texture. The small white flower emerges from the center, revealing a bright yellowish base on the petals, and a slight reddish median stripe on the back of the outer ones.

One of the fascinations of this desert curiosity is the rhythmic arrangement of the tubercles, which are similar to the formal petalled Camellia blossom of Pope Pius IX or a petite "boutonnière."

The culture for *Strombocactus* is simple but cautious because it is a rather slow growing plant. A soil mix of 2/3 sharp sand to 1/3 organic matter and just a pinch of lime is recommended. Moderately water in the summer growing period, and taper off to complete dryness during the winter months. It does well grafted on *Myrtillocactus geometrizans* and *Stenocereus marginatus* stock. When grafted it will develop twice to three times its normal size, and will freely sport "pups" around the base.

Jim Stalsonburg is Park Foreman of Balboa Park and a Horticulture graduate from Mesa College. He collects and grows cacti as a hobby.

GARDENING the Continental Way

Rosalie Garcia

WHAT IS A GARDEN? The average garden is in a residential district and consists of an expanse of lawn in front of a house with perhaps a tree and some borders of flowers and shrubs planted around the house. The back yard, where creative expression is possible, is often fenced for privacy, but takes on the easy maintenance trend so fashionable now. That is Middle Class American: Neat, green, and pleasant. But is it a garden? Is it a little private world where one can walk down paths, stoop to feel and smell plants, sit in a shaded place to hear the tinkle of falling water, watch a bird take a bath, or a butterfly feed? Can one fill a basket with crisp green onions, succulent squash or firm tomato, and finish with peas or beans and prepare them for cooking in the shade of a tree or vine, throwing the discarded shells and leaves in a compost pile?

Such a garden I found on a busy commercial street in a suburban area of San Diego County. The location and owners will remain unknown because they fear their privacy would be invaded by onlookers. They cherish the little private world they have created in a plot about 50 by 50 feet, between two commercial buildings. They maintain it with exquisite care, using the best of organic practices, for their own pleasure and health and grow plants that meet those requirements.

The location, plan of planting, and mixture of flowers and vegetables is unusual in this country, but not in Europe where space in cities is scarce, and a long history of making the most of it has made the merging of the beautiful and useful a part of the culture of even its humblest citizens. They have learned what design can do to make a small plot seem spacious, as is done in this garden.

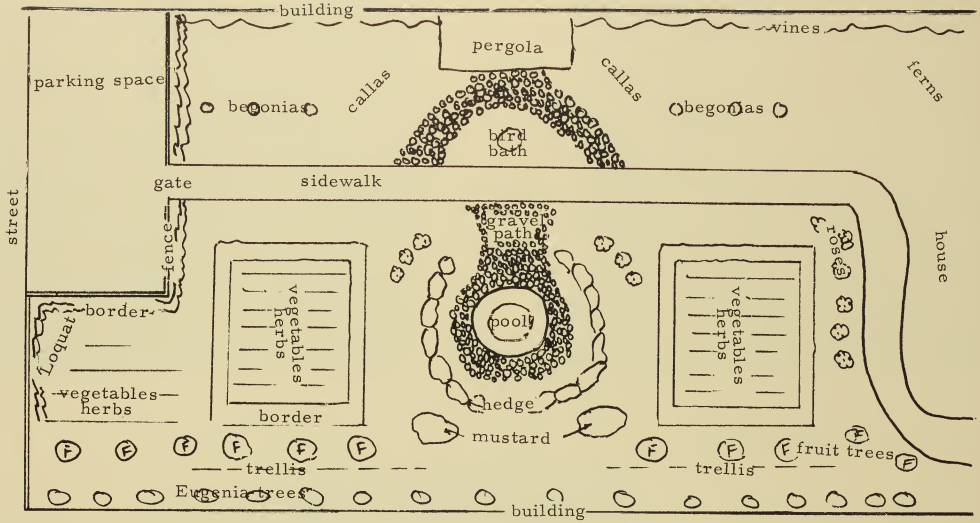
A white picket fence with a neat rounded pergola over the gate is all one sees from the street. A paved parking area is inset in front of the fence. A border of frothy white, fragrant Alyssum hides the joining of the commercial building to the paving. On the opposite side of the parking is a raised brick bed set in the corner with a bushy Nandina and more frothy Alyssum. Even here monotony is relieved with varying levels.

A peek into the garden from the gate gives an impression of spacious order and discipline. Slightly raised rectangular beds of flowers and vegetables growing together, separated by walks, follow patterns that lead the eye until a rhythmic design takes shape. No plant is out of place; not a weed is in sight. The flowers and vegetables are common ones except for an unusual number of the herb comfrey, a most decorative plant with intricately patterned leaves spreading out almost flat on the ground. Nothing is crowded. Each plant is allowed to develop to its greatest potential. Red beets and chard contrast with green cabbage. The soil is visible around each plant and has the cultivated look of a scratched surface that keeps the friable consistency that allows roots to breathe and the water to seep in gently. No hoses were visible.

Emboldened by the peek, I opened the gate and walked in. Even though the space was rectangular, the path to the modest house on the back of the lot did not bisect the space. It divided the garden into two distinct areas: A shaded garden and a sun area, the shade part being on the left and taking not more than one-third of the space. It had been mounded up about two feet against the wall of a building, and the surface covered with the tiny leafed Baby's Tears. The wall was a living background with ivy and the contrasting Fatshedera Vine, a vining hybrid of the common *Fatsia japonica*. In sets of blooming Calla lilies, ferns, Fuchsias, Begonias of common varieties were spaced in the green Baby's Tears. About half-way down there is a garden seat under a vine-covered pergola where one may sit and watch the fountain on the other side of the walk sending up tiny jets of water that fall into a round pool. A little farther down on the shady side is a bird bath.

From the shaded seat the sunny side of the garden stretches out in a vista and rests on a hedge of Eugenias trimmed flat, about ten feet up, which breaks the starkness of the two-story, faded red wall of the building that bounds the

Rosalie Garcia accidentally stumbled on what she considers a "real garden" and hopes it will inspire readers to grow this way.



north side of the garden. Around the pool is a formally clipped hedge of lavender Lantana, and around it a double row of roses, pruned expertly and in full bloom. These are round line. All is formal in line and placement, the best plan for a small garden.

Leading off from the rounded lines of the pool which is central in the sunny area are slightly raised rectangular beds in which the daisies, geraniums, and Felicia, and one bed of Mesembreanthemums are mixed with the beets, chard, comfrey, and spinach. One bed of mustard near the Eugenia hedge had been allowed to go to seed and was a glorious golden cloud waving in the breeze. Latticed trellises about three feet wide were irregularly spaced in front of the hedge and had small tomatoes, cucumbers, and beans coming up to be trained on them. An orange tree in flower blocked the view of a building on the back of the lot.

An L along the side made by the parking inset had prim rows of onions, lettuce, radishes, and squash plants. Geraniums and Alyssum bordered this bed as they did many of the others, so a frothy trail of fragrance invited the nose to follow the paths. A Loquat tree with ripening golden fruit blocked the street view of this section.

A most unlikely spot to find so lovely a garden is this one, but an inspiration to those who have small space, ugly surroundings, hemmed in by encroaching walls and concrete. It answers all the needs of its creators: Beauty, health, and a private world in which the gifts of Nature feed the body and soul.

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THERE IS SPECIAL MAGIC in the words "Let's go to the Fair!" And the San Diego County Fair, known as the Southern California Expo, is really exciting. It is 35 years old this year. It is again under the sponsorship of the 22nd District Agricultural Association of the State of California.

Garden Clubs and the specialty plant societies have been growing plants all year so that when the time comes there will be much material available to carry out the theme. Youth groups, amateur gardeners, professional growers compete for cash prizes ranging up to $600 for the large displays.

The Premium List booklets are available by the first of May and the preparations begin in earnest.

Becky Barret and John Smith of El Cajon Future Farmers of America.

Southern California Exposition

FLORICULTURE

In the Floriculture division one may make entries in the Feature Garden & Landscape Display Division, Feature Cut Flowers Division, Arrangement Division, Corsage Division, Planting Division, Bonsai Division, Carnation, Dahlia, Gladioli, Iris, Orchid, and Rose Sections. This year there will be four acres under shade cloth with 9000 entries and 180 feature displays.

The overall theme of this 1971 Flower and Garden Show is "The Preservation of America's environment and the beauty of its landscape."

When one sees the flower show it is difficult to believe that it only exists for a few weeks. It is as though a fairy godmother waved a magic wand. It is over quickly at the stroke of 12, too! By the 6th of July, all the beauty will be gone.

The carpenters and pond builders get their work done before the actual planting. The box in the foreground will probably be a pool. Some pools are lined with plastic, others are built of thin cement.

FEATURE GARDEN AND LANDSCAPE DISPLAY DIVISION (OPEN CLASS)

Representatives of the Clubs entering display gardens go to the Expo Grounds and talk to Bob Lamp, that fabulous supervisor of the Expo Flower Show, and see their spot. At this time it is bare ground. (A pile of dirt and sawdust will be moved in by the Expo workmen.) Then back to the Club for discussion and planning. The real work begins about a week before the Fair opening, and the weekend before the opening when the men can be counted on to help is a busy time. The day before the Show is the big excitement, one can feel it in the air. Last year one of the prize bulls in the Junior Livestock Exhibit got loose and charged through the area—the owner and others in hot pursuit. It was a flower-loving bull as it stayed on the paths and did no damage.

The garden exhibits are judged on a scale of 100 points. Design counts for 30-40 points, workmanship for 20-30, quality for 10-20, variety for 10-20, correct labeling for 5, lighting for 5, and there are several other points on the various Score Cards which are applied to the exhibits. The design and workmanship are the most important. The show theme this year is Outdoor Living and one should be able to get some good ideas for their own home.

Bob Lamp with some of the Fair employees getting the largest of the fountains ready to go. They are a new feature this year. The Bonsai Lake is new, too, as is the high redwood bridge where one can get a large vista of the area.

The Carlsbad Garden Club was one of the first to get their exhibit planted.

FEATURE CUT FLOWER DIVISION
(OPEN CLASS)

Those who will be exhibiting cut flowers have planted over a one month period in hopes that blooms will be ready to exhibit. The average time from planting to bloom is known, but the weather can influence blooming as much as two weeks on each side of the bloom time. They all hope that any rains or winds will be gentle, too, in the last few weeks so that plants will not be damaged. Great care is taken to bring the exhibits to the Fair in perfect shape. A paper tissue is often gently placed around the bloom to protect it. Empty soft drink bottles in the carriers are often used to transport the individual stems.

CLASS 138-FLOWER ARRANGEMENTS (AMATEUR)

By talking to some exhibitors who plan to enter in the Flower Arranging sections, I understand that it is possible for one entrant to have 75 exhibits in competition. Arrangers advise that one must have at least two friends with good gardens as a back-up for material if one plans to enter most of the sections. One garden just can't grow enough.

Each exhibit is shown for only two days, so many take turns in driving to the Fair with friends.

Husbands have been cutting and finishing bases for months. The arrangers have kept their eyes open all year for interesting containers which they hope will fit in one of the sections. Some of the arrangers use workrooms, others set up tables in the garage and let the car sit out for a month, and others take over the dining room. For at least two weeks before the show all are experimenting and designing and making a final decision on what container, what material, and what design they will use for each entry.

Hard work, but lots of fun!

...capsules

Walter Andersen

Grace T. Brophy

AN OASIS HAS BEEN DEFINED as a fertile or green spot in a waste or desert. Such an oasis of lush greens and *Cocos plumosa* palms exists at 3642 Enterprise in San Diego, the address of the Walter Andersen Nursery. "Greening up" San Diego has been the task Walter Andersen has taken upon himself since arriving in town from Nebraska in 1922. He has been a nurseryman in this community for 49 years, 43 of which have been running his own business.

Nurserymen are a breed unto themselves. They are growers, mostly. Usually they are reticent speakers until they find someone who shares their particular love. Then they bloom like a flower. They are usually self-effacing, and they can perform untold physical tasks with apparent ease. They plunge into their work, it seems, for the sheer joy of seeing things grow, and they work all hours and every day. Add to these characteristics a Danish heritage, and you pretty well have a description of Walter Andersen.

But there is more. Ask anyone in the know. Has there ever been a Fair at Del Mar where the

Andersen Nursery has not been represented? Or a flower show where Andersen Nursery has not contributed? The Andersens call it "good business sense," but others call it a feeling for people and growing in the difficult area of San Diego that is rather unique. The Andersen truck at the back door of buildings sponsoring floral events is a usual sight. Indeed, if it weren't there its absence would be noted.

It all started in 1919 when Rose Court Nursery in Mission Hills was begun by Chris and James Westergaard. The business was pretty much cut flowers and potted plants. In 1922, a 22 year old Walter Andersen arrived in town to begin work for his two cousins. The cousins had met years before in 1909 when Chris had stopped off in Nebraska to visit his relatives. The Andersens farmed 80 acres in Howard County. There were 8 children in the family; Walter was the second oldest. All now live in San Diego. They are: Hans Christian, a carpenter; Walter; Anna, a retired nurse; James, a turf farmer in Rancho Santa Fe; Mary, a housewife; Dora, a retired florist from Pacific Beach; Thorvald, called "Swede," who has a garden maintenance business and also teaches gardening in the San Diego Adult Education Program; and Lawrence or "Corky", who has worked for Walter for 40 years.

Up until his 18th year Walter helped farm the family land. For the next 4 years he hired out to 2 different farmers before the invitation arrived to come to San Diego and drive a truck at Rose Court Nursery. This he did until January, 1928, when he went into business of his own. Not wishing to compete with his cousins, his business was more a nursery line.

A half acre site was picked at the foot of Juan and Taylor. Someone from Mission Hills do-

Grace Brophy is a "retired" medical editor and is now Associate Editor of CALIFORNIA GARDEN.

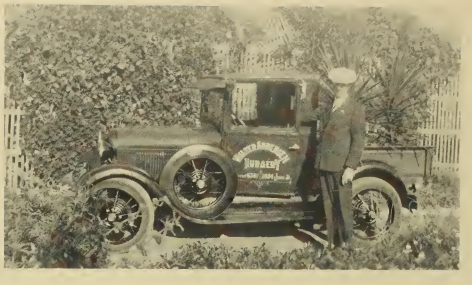
The profile sketch of Walter Andersen was drawn by Mark Abrahamson, an Art major at San Diego State.

nated an ornamental date palm tree to the nursery, and it was planted. And there it still remains. But the idea of landscaping heavily with palms was one that continued to grow in his mind. In the 40's and 50's many were planted in the area, and it almost became a necessity that anyone in the business know a great deal about them. There are about 100 varieties of palms that grow well here. He began to grow all varieties, some from seed, learning from books and experience. He joined the National Palm Society and still is an active member. Today he is a recognized authority, and Desmond Muirhead in his 1961 book, "Palms," credits Walter Andersen to that effect.

The Andersen Nursery, and particularly James Murphy, who heads the landscape department with Mr. Andersen, has landscaped with palms as far as the Redlands and Long Beach. They have done many of the U.S. National Banks in the area, Kona Kai Club, Park Prospect Apartments in La Jolla, the front of Mercy Hospital, and they relandscaped the main post office downtown, considered one of the most outstanding postoffices, landscape wise.

Yet there are many public sites where the lack of palm trees rather bothers Mr. Andersen and his son, Walter Andersen, Jr. (He really is not "junior" since his middle name is different, but everyone refers to him as such.) Junior said, "It's almost unnatural not to have palm trees in certain public areas." Walter, Sr. thinks, too, more palms of different varieties should be planted in public and business places.

The Andersen home garden in Clairemont is loaded with palms, all planted by him. At his growing acreage on Morena Boulevard and at his Nursery he has planted mostly *Cocos plumosa* palms. They grow fairly fast, make a nice shade tree, and they are easy to move. But he hasn't



Walter Andersen and his Model "A" pick-up at his first nursery. 1929

planted a single one in his own garden, for they grow too rapidly for a home garden. In his own garden he has about 8 *Seaforthia elegans*, a cleaner palm tree. "When the leaves die, they don't hang and look trashy. I've grown several hundred of this variety," he said. He also has "a lot of" *Phoenix roeleleni* (Pygmy Date Palm), a *Chamaerops humilis* which is a fan-leaf multiple stem, and a Fish Tail Palm, *Caryota mitis*, which is relatively rare in this area. He originally saw the latter on a trip to Florida and tried to grow it here. It is somewhat of a problem, and it suffered frost damage this past winter.

In 1937 two significant events occurred: He married his childhood sweetheart from Nebraska, Byrdie Sorensen and he made her his bookkeeper, a position she still maintains. Secondly, he moved his nursery to some rented land near the present U. S. Marine Base (Highway 101, one block from Rosecrans). The move was short-lived, because the property was repossessed by the government, and so in January, 1938, a 1 1/2 acre site on Rosecrans and Moore was purchased. Behind the main store *Cocos plumosa* palms were planted and a big old rubber tree. In 1957 when Ada Perry, an employee of the nursery and now an accredited nursery woman in her own right, began her free Saturday garden classes, they were conducted in a pergola under the old rubber tree. "The classes were Walter's brain-

storm," Ada recalled. "Nothing like it had ever been tried in San Diego. The classes were advertised on the garden page of the local papers," she said. "The first morning Walter came out and introduced me, and it was a very short introduction, too. I stepped up, opened my mouth, and the garden lessons began, and they are still going on." Classes continue today in the present two acre nursery site on Enterprise Street, where the nursery moved in the fall of 1969. Because of their popularity classes are now held on Thursday and Saturday from 10:30 to 11:30.

Does Walter Andersen give any classes? "No," Ada said. "I've never been able to drag him out since that first day. I have guest speakers, and there have been times when I would like Walter to conduct classes, but he never will." With a bit of nostalgia she reflected about the first classes. "During the midsummer days sitting under that old rubber tree talking about flowers and the like was just wonderful; when it got cool we had a charcoal stove out there in the pergola. When it rained we moved into the store. You've got to give Walter credit for his patience in continuing these garden classes. And it has been rewarding for both of us."

Now that it is getting to be Fair Time at Del Mar, there is the usual planning underway at the Nursery. Ever since the first Del Mar Fair, the nursery has been represented with from 1 to 8 exhibits. In the old days about two to three months before the Fair they would plant grass at the Fair Grounds. The method proved unsatisfactory. When the exhibits moved in, the grass was ruined, and so Walter supplied dichondra through James, his brother, the turf farmer in Rancho Santa Fe. Previously his place was across from Kate Sessions Park. The dichondra was "rented" by the Fair and then sold second hand after the Fair. Walter, Sr. has won many awards at the fair and also "miles and miles" of ribbons which are "some day" going to be framed above the office entranceway in the Nursery. Among his trophies are a special award in 1953, an award for the most outstanding contributor in 1962, and the flower show special award in 1965.

"Junior" joined the nursery staff full time in 1960. He orders everything for the store while his Father orders everything in the plant line. Junior's avocation is auto mechanics, and he belongs to the Model A Restorers Club. Since 1959 he has been buying old cars, and the fourth such car was a 1929 Model A Pick-up just like the first new car his Father ever owned. It is pictured in this article in front of the nursery. The picture heads the Andersen Business stationery.

At present the nursery employs about 28 people and one cat, a good mouser named Nancy whose bed is in a place of honor, on Senior's desk. She's been with the nursery for the past 9 years and considers it her animal domain. Now there is a sign as you enter the nursery, "Please for your own safety and that of your pet keep him out of the nursery."

All else are welcome in this oasis. And everyone knows that. As one employee put it, "He has continued interest to give the customer the right information, and this keeps us on our toes. Gardening in this area is just different, and nobody knows that better than Walter. And nobody tried harder to make things green."

Walter Andersen in his garden. Photo by Robert Altaffer.

GROW MACADAMIAS

Lois E. James, Ph. D.

Left: M. integrifolia clusters.
Right: M. tetraphylla.

MACADAMIA NUT TREES ARE FLOURISHING in Southern California and are producing large clusters of delicious gourmet nuts. Many connoisseurs consider the macadamia to be the finest nut in the world. Most people's experience with macadamia nuts is from finding them in gourmet sections in markets in cans or jars, or possibly from being served macadamia nuts on airlines. San Diego fair goers have tasted hot roasted nuts at the macadamia exhibit. If you have not eaten macadamia nuts, you indeed have something in store!

THE SPECIES

The members of the genus *Macadamia* are large evergreen trees and belong in the family Proteaceae along with such well known ornamentals as *Grevillea* and *Leucadendron*. There are two species of macadamia trees which produce the edible nuts. They are *M. integrifolia* & *M. tetraphylla*. *M. tetraphylla* is referred to as the rough-shelled type and *M. integrifolia* as the smooth-shelled type. The tetraphylla nuts have a slightly sweeter taste. However, the nut kernels of recommended varieties, either raw or cooked, look about the same, and the difference in taste is not great enough that one would like one and not the other.

The trees of *M. integrifolia* are variable but generally are large and spreading. It is not uncommon for the trees to have a spread of 40 to 50 feet and reach heights of 60 or more feet. The leaves are shiny, petioled and mostly in whorls of three. The edges are entire to irregularly toothed, teeth usually fewer than 10 and not very spiny. The spines are not harsh. Mature leaves are up to a foot in length and two to three inches wide.

The leaves of *M. tetraphylla* are sessile and mostly in whorls of four. The leaf edges are regularly spiny-toothed, with generally 30-40 teeth on each side. The spines are stiff and can scratch the skin. When pruning or working around the tree it is advisable to wear a jacket for protection. The leaves are variable in length and commonly somewhat longer than in *M. integrifolia*. Occasionally leaves are seen almost two feet in length. The width is from one to three inches.

Integrifolia flowers are white and tetraphylla flowers are generally pink. The flowers occur in racemes which vary from about four to 18 inches in length. The number of flowers in a raceme is from 100 to 500. Each individual flower is about 3/4 inch long.

The pistil of the flower develops into a fleshy green husk which splits open at maturity. The husk contains 1 seed, a kernel with a hard shell around it. Botanically, a macadamia is a follicle, and a nut only in the popular sense. However, calling it a "nut" is common even in the technical literature.

Cluster of Beaumont.

Dr. James is a member of the board, Vice-president, and Chairman of the Research Committee of the California Macadamia Nut Society. In addition to being a nut enthusiast and owner of a macadamia orchard, she is a professor of Biology at Whittier College, Whittier, California.

M. integrifolia is a delightful tree to have in the yard because generally it is producing some nuts all year long, although in California the major crop is produced during the winter months. Fortunately, many of the nuts mature just prior to the Christmas season. Tetraphylla nuts mature from September to January and are not producing nuts at other times.

Both cross pollination and self pollination occur. A study in Hawaii indicates that the presence of bees in a grove somewhat increases the yield. In addition, the two species readily hybridize. The leaves of the hybrids have petioles, and they are intermediate in spine characteristics. Both species are highly heterozygous which provides the basis of the long term project of seedling selection. These trees vary not only in the shape, size, taste, and quality of the nut, but in vegetative characteristics such as resistance to frost, to wind, to heat, to chlorosis, speed of growth, production, the time of the year, and the length of time that the nuts drop.

PROBLEM IN NAMES

Due to a mix-up in describing and naming these trees back in the 1850's, incorrect names were applied to the species for many years. Prior to 1954, *M. tetraphylla* was known as *M. ternifolia* and between 1954 and 1957 *M. integrifolia* was known as *M. ternifolia*. The genus was revised in 1956. Now *M. ternifolia* refers to the bitter unpalatable Maroochie or Gympie nut. In some of the botanical gardens in California the macadamia trees are still incorrectly labelled.

ORIGIN

Both species originate from Australia. Apparently, macadamia trees were first discovered in 1858 by 2 botanists, Walter Hill, and Ferdinand Mueller. They named the tree in honor of John Macadam, M. P., who was Secretary of the Philosophical Institute of Victoria at that time. Probably the first orchard to be planted was in 1870 at the Fredrickson Estate at Rous Mill, New South Wales. According to records, the first introductions of macadamias into Hawaii were in 1878 and in 1892. Macadamias became firmly established in the Hawaiian Islands during the 1930's, following an extensive program of selection for nut quality and desired tree characteristics.

M. integrifolia flowers.

It is not certain when the first tree was introduced into California. One report states that a macadamia was planted at Santa Barbara a year before it was introduced into Hawaii. But it is known for certain that seeds were planted in 1879 on the Berkeley campus of the University of California. One tree by Strawberry Creek still remains. The first orchard in California was not planted until 1946 at Oceanside.

CLIMATIC REQUIREMENTS

Soil: Although macadamias do best in well drained slightly acid soils, the trees will grow on a wide variety of soil types including heavy adobe. Many hundreds of trees have been planted in California where the soil is too heavy for avocados.

Temperature: The trees should be planted in frost free areas. Where citrus and avocados grow, the temperature is fine for macadamias. Although frost damage is a problem, the macadamia is more resistant than avocados. On a number of occasions over the last 20 years macadamia trees planted in avocado groves have been observed to have come through cold spells undamaged when the avocado crop was ruined. Seedling trees vary in both cold and heat resistance. Where trees have been planted in marginal areas with regard to temperature, it is not uncommon to see trees with frost damage only below the graft. Many times this can be avoided by using fiberglass wrappers during the winter months.

SEEDLING TREES

For seeds to germinate, they must be planted before they dry out. Seedlings appear any time from two weeks to six months. Many seeds planted in outdoor seed beds in California germinate in about six weeks. Of course, seedling trees must be planted from stock plants for grafting, but seedling trees should never be considered for growing to maturity for a commercial orchard. The production and the quality of nuts on seedling trees are unpredictable, and the nuts are not marketable. Planting a seedling tree in your yard is only for your own amusement and amazement. Of course, you can come up with a winner, but most of the time it is a disappointment when compared to the results of grafted trees. Sixty thousand seedlings were grown in Hawaii to obtain the half dozen or so that are used commercially.

VARIETIES

To produce many nuts of good quality, it is essential to plant recommended varieties. The California Macadamia Society, having tested all sorts of soils and climatic conditions, recommends the varieties Elimbah, Keauhou, Ikaika, and Beaumont. Elimbah is a tetraphylla; Keauhou and Ikaika are integrifolias; Beaumont is a hybird. Beaumont is recommended especially for home planting. It is a beautiful fast growing tree, produces enormous clusters of nuts, and is upright in growth habit with new reddish and bronze leaves. The flowers are bright pink. The only commercial disadvantage of the tree is that it drops nuts over a prolonged period of time with the largest crop from January to March, after the Christmas season.

WHERE TO PLANT

If you are really going to buy land and plant a macadamia orchard, I suggest that the first step is to read 2 articles in the 1965 yearbook of the California Macadamia Society. One is "Selection of a Macadamia Orchard Site" by Elwood E. Trask and the other is "Establishing a Young Orchard" by Walter Beck. Elwood Trask most aptly states: The ideal site could be one where the land is smooth and so gently sloping as to be almost level, the soil a deep rich sandy loam, located in an area where the weather is so mild as never to have a temperature below 50 degrees in the coldest months, nor more than 80 degrees in summer, with rainfall so well distributed that every fifteen days during the summer months a gentle rain gives about two inches on the soil, with intervals of about three weeks during the colder months, and gentle breezes blowing every day, but never a wind stronger than twenty-five miles per hour." The only practical solution is to make compromises.

Leaves from M. integrifolia (top) and M. tetraphylla (lower).

The trees must be planted in a relatively frost free area and water must be available. The type of soil is not so critical. Competent advice is available. You may be sure that wherever citrus and avocados are growing, macadamias will thrive. If you are starting on undeveloped land, the type of brush and trees are indications of both temperature and soil conditions. Agricultural consultants and the farm advisors can interpret the climatic conditions of areas where no record has been kept. There are many areas in

Macadamia tree in Carlsbad.

San Diego County suitable to macadamia culture. Examples are areas between Camp Pendleton and Palomar Mountain such as Du Luz, Rainbow, Lilac, and Pauma Valley.

WHERE TO GET TREES

Macadamia nursery trees are being grown by Tanner Nursery in Rancho Santa Fe, M & N Nursery in Vista, Westree Nursery in Carlsbad, Thomson Nursery in Bonsall, and Rancho Sespe Nursery in Fillmore.

A few trees for the yard may be picked up most any time, but if a large number is required, it is necessary to order ahead. Trees are in great demand.

PLANTING AND CARE

Trees from the nursery are either balled or in containers. A hole is dug large enough that when the tree is set in the hole the soil at the top of the ball or container is at ground level. The space around the ball should be packed solid with soil and mulch. It is advisable to stake young trees, especially in the windy areas. Water at the time of planting. Making a basin around the tree will conserve water. The amount of water needed will vary with the type of soil, but in general, requirements are about the same as for avocados. The low type of sprinkler system is quite satisfactory. The amount of area covered by the sprinkler must be increased as the tree grows. Trees at the time of planting are not fertilized and after a year or two fed very lightly. Young trees are very susceptible to fertilizer damage. Mature trees definitely require a fertilizer program.

It is recommended for commercial plantings that spacing should be 20' by 20', although with shallow soils trees can be closer.

Pruning practices are normally carried out in orchard trees to prevent branches too low to the ground and branches too close together. Yard trees can be pruned to fit the landscape desired.

PROPAGATION

Macadamias are propagated by grafting stems from recommended varieties onto seedling trees. Budding is possible, but it is difficult to do, and the bud grows very slowly. Producing trees by air layering and cuttings is seldom done because the root system which develops is weak and roots grow laterally too close to the surface.

DISEASES AND PESTS

To date, the macadamia has remarkably few diseases or pests that effect its growth or its production. *Phytophthora cinnamomi*, Cinnamon Fungus, can enter a macadamia only where there is a wound, and it does not invade either the root or stem extensively as it does in avocados. Many trees have proven to be immune even from injections of the fungus. In California there are no macadamia pests of any consequence or at least that cannot be easily controlled. Even the deer do not eat Macadamia leaves if they can get anything else.

HARVESTING

The nuts fall to the ground when they are mature. It is not advisable to pick them off the tree because the mature cannot be differentiated from the immature, nor is it advisable to shake the tree because some of the immature nuts drop also. The husk is removed and the nuts are ready for drying. After a couple of weeks in a dry, ventilated place, the shell is dry enough to crack. It is hard to crack, and the ordinary nutcracker with flat sides is not suitable. Two different crackers are available through the California Macadamia Society. Power crackers are available from other sources.

MARKETING

Enough acreage has come into production in California that a marketing program is a necessity. A cooperative has been organized and the by-laws have been accepted by the State of California.

CALIFORNIA MACADAMIA SOCIETY

The first serious interest in commercially planting macadamias was just after World War II. Nurserymen and farmers from Southern California had been exposed to the nuts in the service

while stationed in Hawaii. In 1953 the California Macadamia Society was founded. The objectives of the Society are to furnish authoritative and timely information on macadamia culture and prospects, to assist growers with harvesting and marketing data, to advise nurserymen as to varieties and propagation methods, to encourage the University (UCLA) to assist the industry with research, and to formulate policies, where indicated for presentation to the State Legislature.

In June 1954, the Society entered an exhibit at the San Diego Fair and has every year since that time. The hot salted nut concession started the following year. The first yearbook came out in March, 1955 including a published list of 142 members. Today there are about 350 members, representing 8 states, and 15 different countries. California has become the world center for information about the culture of the macadamia.

RESEARCH

There is university and college participation in the establishing of a macadamia nut industry for California. The early contributions included investigations in (1) Fertilizer, watering, pruning, and grafting trees; (2) Types of soils and climatic conditions suitable for macadamias; (3) Determination of nut quality; (4) Diseases and pests; and (5) Tree selection for the environmental conditions in California.

Research work in an Oceanside orchard by the society has demonstrated that a seedling orchard is an economic disaster, that a mature orchard may be top-worked and rapidly return to production, and that chemical weed control is possible without damage to the trees. Also a study on major nutrient requirements has just been completed.

A number of highly technical research projects are in progress at Riverside and at Whittier College. These include the oils characteristic of the nuts and how they relate to flavor and cookability, various anatomical studies, heat, cold, and pollution resistance, growth patterns and the physiology of grafting.

PUBLICATIONS

The Society publishes a yearbook which is included in the cost of membership, a four page pamphlet which is free and available to people interested in planting even a small orchard, and a one page handout for the curious and the front yard tree owners. Another pamphlet is available from the San Diego Farm Advisors office.

THE FUTURE

Macadamia trees in California take a little longer to mature than they do in Hawaii, but the trees, once mature, produce as many nuts and the nuts are as good. However, because of the cost of land and water, large plantings of many hundreds of acres are not so common as in Hawaii. The tonnage of nuts that are produced here most likely will come from the accumulation of small plantings of a few trees to 5 or 10 acre groves. Living in the middle of a small grove of citrus, or avocados, and now macadamias, is a way of life for many Californians. Growing macadamias is fun and easy and also, there are financial returns.

The nuts are high in food value. They are high in fats, proteins, carbohydrates, minerals and they even have some vitamins. The trees are fine for shade trees and surpass many ornamentals in their beautiful foliage. Aside from too cold a temperature, the trees can take a lot of abuse. They are even free of smog damage. So, for business or fun, grow macadamias.

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now is the time

-a cultural calender of care from our affiliates-

Nibby Klinefelter

BONSAI SOCIETY

Masao Takanashi

Now is the time

to continue to water at least once a day--more depending upon the weather.

to fertilize with a low-nitrogen liquid (5-10-10), using weaker solution than recommended.

to spray foliage with a good stream of water to knock off aphids.

to keep a lookout for scale--particularly on quince. Seek expert advice if present.

CACTUS & SUCCULENT SOCIETY

Jim Stalsonburg

Now is the time

to finish repotting in well drained soil--protect from full sun until new roots are well established.

to graft cacti--the warm nights are good for forming roots.

to fertilize -- straight urea (45-0-0) for globular cacti making pups and columnar types forming new arms.

to use 10-20-0 for the late bloomers, such as coryphantas.

to feed Easter-lily hybrids with 0-10-0 to extend blooming period.

to water and to guard against insect damage.

Nibby Klinefelter is a compulsive gardener who loves plants. She is editor of Espinas y Flores but finds time t o contact all of our affiliates for this Calendar of Care.

CAMELLIA SOCIETY

William Gibson

Now is the time

to fertilize again (after a three month period of not feeding) with a liquid fish fertilizer product--but--

to water thoroughly (including foliage) the day before to avoid defoliation.

to deep water once a week.

DAHLIA SOCIETY

Mildred Middleton

Now is the time

to maintain your watering program -- remember, those hollow-stemmed plants are THIRSTY.

to rub off two buds when still tiny, leaving best bud (which is normally in the center) to flower.

to control mildew with a sulphur preparation.

to feed with 5-10-10.

to control leaf miner, thrip, and other chewing pests.

FUCHSIA SOCIETY

James Watson

Now is the time

to recall that Fuchsias are from the hillsides and seasides of the tropic zones. They thrive on moisture in the air.

to fog foliage often.

to avoid water-logging of root system--more are killed by overwatering than under --but do not allow to dry out completely.

to continue the battle against inchworms as they hatch again in August--they are hard to see as they take on the color of leaf or bloom as they eat. Tiny holes betray their presence.

to lower hanging baskets to keep root system cool in hot, dry, windy weather.

to go along with cycle of nonbloom during this period.

to feed with very low-nitrogen (5-10-10) not oftener than three weeks apart.

IKEBANA INTERNATIONAL

Barbara Jones

Now is the time

to set out chrysanthemums for fall arranging. Trim off side buds as they develop to encourage longer stems on single flowers.

IRIS SOCIETY

Thelma Carrington

Now is the time

to divide the tall, border, dwarf bearded iris. (Do not move spurias or natives.)

to separate, discarding old woody centers.

to label, putting them in cardboard cartons in a shady spot to rest for several weeks.

to leave foliage growing--it isn't necessary to cut it back unless it browns. (Leaves and rhizomes feed each other.)

to prepare soil with organic matter for setting out the divided rhizomes, which should be covered with soil until well established, then removed.

to remove spent blooming stalks (unless you're saving pods for dried arrangements).

to beware of aphids --wipe them off or spray them off with the hose.

ORCHID SOCIETY

Ione Maloney

Now is the time

to enjoy a quiet period in the orchid world--they're putting out new growth and getting ready for more flowering.

to maintain program against pests.

to step up watering in this hot dry weather.

to provide extra shade if necessary.

ORGANIC GARDENING

Paul Canady, Sr.

Now is the time

to stop using chemicals.

to plant "green manure".

to remember: "Without organic matter derived from plant or animal life, the soil is sterile, unsuitable for cultivation and able to sustain only the lowliest of weeds."

ROSE SOCIETY

Esther Barksdale

Now is the time

to recognize that deep weekly irrigation is a MUST.

to maintain a two-three inch mulch to keep the roots cool. (The Barksdales have had good luck with fine redwood compost.)

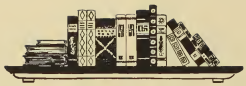
to feed monthly with about 1/3 cup balanced rose food per plant.

to supplement with foliar feeding of a liquid rose food to stimulate fall bloom.

to continue regular spraying to curtail mildew and rust.

to watch for thrips, mites, and red spider on the lower growth--a full spray of water can knock them off.

to continue grooming--remove spent blooms, excessive growth and any diseased or split canes.



THE BOOK SHELF

In Praise of Roses. Harry Wheatcroft. Illustrated. Henry Regnery Co. Chicago, c1970. $12.50, 192 pages.

Harry Wheatcroft gives a vivid description of his book in his introduction. He calls it "notes on a love affair, an account of one man's romance with the first lady of flowers." For a half-century this man has been personally and passionately involved in the rose business.

He gives attention to propagation and classification of modern roses and his own hints and tips on the growing of roses. There are pointers on making the most of our own roses and exhibiting roses. These ideas on exhibition are given with an eye to British Rose Shows, since Harry Wheatcroft is an Englishman.

Of great interest is the portion of the book devoted to stories of great rose growers around the world and his association with them. Intimate glimpses are given of Willi Kordes and Mathias Tantau of Germany, the Meillands in France, Walter Gregory in England, Sam McGredy in Ireland, Pedro Dot in Spain, John de Vink in Holland, and, close to home, our own Bob Lindquist and Herb Swim. There are photos and stories of all these men and others who make our modern rose what it is today.

Harry Wheatcroft traces the historical development of roses and gives a list of his own favorite selections. There are many beautiful color plates of his favorites, and I don't believe you can look at these pictures without wanting to add some of these varieties to your garden. Remember, Wheatcroft is a rose seller, and he knows his business well.

A highlight of the book is the chapter devoted to "the greatest roses in my life." He says there are four of these. I wonder if you can guess the four?

If you are interested in roses, don't miss this book.

Reviewed by Doris Blick

Doris Blick is a City Librarian who loves plants. She is our Floral Assn. Librarian, too.

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Dry your own Flowers

Beverly A. Kulot

I AM STILL ENOUGH OF AN AMATEUR GARDENER to be just delighted when anything I put in the ground really grows and produces. Formerly, when I wanted to preserve the fruits of my labor I took colored snapshots. As there is rarely a time of the year when I can't find something in my garden to make an arrangement, I was never interested in dried flowers, Statice and Strawflowers excepted. But when the Point Loma Garden Club agreed to provide period arrangements on a perpetual basis for the Cabrillo Monument Lighthouse, I became inspired to add a little more than the usual dried weeds which work well in line arrangements but have limited use for the type of arrangements which were needed. So, I started drying flowers from my garden.

My first experiments were rewarding if not perfect, and I have just begun. I was able to retain natural color in the dried material, too.

(If you do full-blown roses you must take them apart, treat them, and glue them together again.) Take a chance on any flower.

Prepare flowers. Cut off the stem at the base of the flower and put in a short wire. This gives you a handle and something to stick in a stem.

If you would like to try drying flowers follow these directions:

1. Buy a bag of fine white sand. It is sold as children's sandbox sand.
2. Collect a large assortment of boxes. Shoe boxes are excellent and will hold about three large flowers. You will need low shallow boxes for sprays, such as Larkspur.
3. Have several sizes of wire and wire cutters available.
4. Collect flowers. Try many kinds; you have nothing to lose.

Wash the sand. This removes any salt which will change the color. Put it in a bucket, fill with water, pour off, add water, pour off. Dry it thoroughly in the sun, or dry it in a roaster pan in a slow oven. A teaspoon of baking soda (per two gallons of sand) may be throughly stirred through. This is supposed to help preserve the color. (Alkaline, you know.)

Collect the flowers. Cut them with stems or with none. Remove the center flower from a cluster of Floribunda roses. Buds only.

Dry flowers. Most flowers should be dried face up. Place an inch or more of the clean sand in the bottom of the box. Bury the bottom of the flower and start gently sifting the sand on its face. Push the sand around under it as the weight increases. Completely cover the flower. Several flowers may be put in one box. Be careful that the petals do not touch. Date the box and positively no peeking for two weeks. This is an average. Small things take less time; large heavy ones may take more.

Flowers with petals with a decided back curve should be dried face down. It seems natural to bury the face in the sand and fill in the back, building from underneath as the weight increases on top.

Dahlias, Zinnias, etc. face up. Shake the sand into the petals.

It is necessary on some flowers to run a line of thinned glue on the back after they have dried. Your native intelligence will decide which end is up.

For spikes cut small pieces of cardboard and stick them into the inch of sand at strategic spots. Balance the spike in the notches and start burying.

Dry Stems and Leaves. Stems and leaves are processed separately. I had a jar of dried broom that I used for stems. It has a natural hollow stem. Many leaves dry naturally upside down or in a vase so they develop natural curves. Some are processed in glycerine (2 parts water, 1 part glycerine). To retain the green, the leaves may be dipped in green dye while fresh. I haven't tried that yet; I was in a hurry. Natural ferns dried in sand retain their color for months.

When you dry stems and leaves put in a short wire to match the wire in the flower. It is easier before than after. You just pull out the wire in the stem and slip in the flower.

Beverly Kulot, Floral's New president, has a beautiful traditional garden that features annual flowers.

Finish the dried flowers. After two weeks gently pour off the sand and 'fish' out the flowers. I hope you will have a nice surprise! Brush off the remaining sand with a small soft paint brush. The wire which has become a part of the flower by now will easily slip into a dried stem. The finished flowers may be stored in boxes until arranged.

Dry Strawflowers. I grew my own Strawflowers. It was wonderful to have many sizes. I hung them in buckets, on their own stems, to dry. What a difference from the purchased ones. All of mine came up pink, so I purchased some white and yellow to fill in for arrangements.

Dry Statice. I don't hang Statice to dry. I put it in a jar so it will have some shape besides straight up.

The variety of flowers is endless. You can trade flowers and have an assortment that you have never known before.

I received many honors on my basket of dried flowers (see sketch) in our last Flower Show. I would never have had the material if I hadn't been processing the flowers for the Lighthouse. After the show I took the arrangement apart and made five small one for the Lighthouse.

From arrangements I have graduated to pictures. I draw and paint, but not like Nature.

Dried flowers will last for years if they are not in the sun. I cannot begin to tell you all of the ramifications. Since I have started drying I have found them wonderful to give as a small token in a picture or bouquet to a friend in an apartment or hospital. Who knows, it may be a way to stamp out plastic flowers!

Authors' note: I suggest that you read Sunset's "Art of Preserving Flowers". Besides many processes, it has a long list of flowers and how they respond to drying. You will find it worthwhile.

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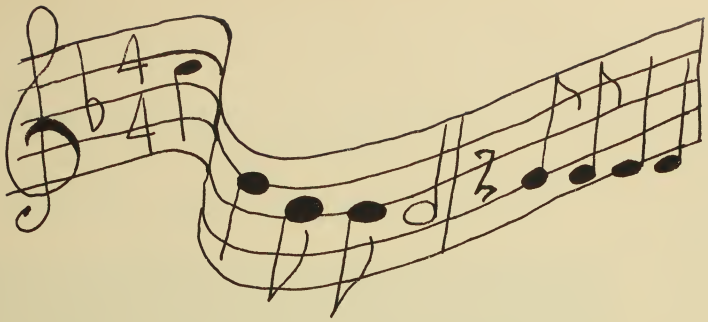
Sing the BLUES

Josephine Gray

SOMEBODY ONCE SAID THAT BLUE is the dearest color God ever made. It isn't a strikingly unique thing to have said, but I think of it every spring when Rosemary is in bloom, the purest blue-violet with the sun shining on it. From a little distance you can almost see the color vibrate, but on an overcast day or when the shadows fall in the late afternoon it is cobalt blue.

This grows to be a great tall shrub as does one with light blue flowers. Then there is a recumbent variety which foams over a wall or stitches itself along the ground in the palest of blue water color washes. Below the wall stands a row of the brilliant blues, and it is hard to decide which is the more beautiful. Three years ago all this magnificence was a handful of water-rooted cuttings.

A few people who have come to garden walk with me in the fall, say that they don't have room in their gardens for anything which doesn't bloom. Of course, I have private reservations about such people but make bold to say "Come back in the spring and summer." I grant that many herb blossoms are not flamboyant, but like quiet people, the longer you know them the more you find in them to love and admire. If Henry Penny had had Borage flowers fall on her she would have had reason to think that the sky had fallen. Just three plants will make an uninteresting corner come to life; the large muted green leaves are a perfect foil for the tiny cerulean blossoms that emerge to droop in a loose raceme from among them. The foliage looks soft but it is quite rough to the touch, and incidentally tastes of cucumber. Pick some of the blue stars and put them on sliced tomatoes to mystify your guests.

A row of Clary Sage or a small clump of three or four is a striking affair. They have long spikes of blue and white flowers with a pinkish bract or lip beneath them. I want to describe their size, but if I say sweet-pea or snapdragon you will think they look like that and they don't--they look like Clary Sage and nothing else on earth. Their distinctive and indescribable fragrance is like nothing else also, and humming birds come to them as natural feeders all summer long. They grow tall, and I thought they would be attractive accent plants in the perennial border, but my ordinary plan of watering was too much for them. They like a rather dry location and flourish mightily and seed themselves, too, where the watering can be controlled. This is a pleasant thing, for being biennial it means that you always have a new crop coming on. Herb books written by Eastern gardeners describe the foliage most attractively, but I have never found it to be so. Snails love it (as they seem to love all sages); consequently, its petticoats are always ragged, which is another reason for keeping it to itself and in the back-ground. However, I am willing to fight snails all summer for the joy of having its blossoms and the humming birds and the fragrance.

Hyssop is another story as far as fragrance is concerned. If you are atavistically inclined, you may like the faint far away skunky scent it has when rubbed between the fingers. However, you don't have to rub it, and it is a beautiful plant to have in a flower border with its narrow dark green leaves and spikes of purple-blue blossoms which grow in fat whorls up one side of the stem. It grows very easily from seed sown in the fall or early spring, and in spite of being a perennial, it blooms the first year. Anise-hyssop would probably be more desirable to most people since its leaves are redolent of anise. Its seeds are not always easy to find, and I have never discovered any plants in a nursery. Stalking elusive plants is one of the interesting things about being an herb gardener detective.

The innocent blue of the little Flax plant is a heart-lifting thing to have among your flowers, or if you have the space, a little pool of them is a delight not only to look at but to cut from for tussie-mussies or miniature arrangements. In the cold part of the year Dentate Lavender is blue-purple, but its evergreen foliage and its ever blooming flowers make it one of the most loved and most important herbs in my garden. There is a variety with gray foliage and the lavender-bluish flowers stemming up from it are enchantment.

When you sing these blues you are not downhearted; they are all in the major key, and their melody will lift your heart to the blue sky.

Josephine Gray researches, grows, and uses herbs. Her garden in Rancho Santa Fe is a delight.

The Plant World

Paul C. Hutchison

PEOPLE, PLACES, PLANTS. The old, the new, the rare, the endangered species, the story behind the man, the place, or the plant. These will be some of our subjects here and in the future.

By profession I am a botanist, a student of plant life. Now, also, advertently, I am a businessman. The business, however, relates in all aspects to plant life. Flowers, plants, and books that relate to them, and other natural history subjects are what we sell. Also ideas. Also, I am in association with the development of a new botanic garden to be known in the future as the California Botanic Garden. Here the public will be able to view old and new plants as cultured, and in many cases, to also buy them. This obviates a prime criticism of many of the world's botanic gardens-that you can see, but cannot get what you see. The experiment is noble and new; there is no other such place in the world. It is young still, and the future not firm. But already there is much to show. And visitors from over the world (every continent except Antarctica) do come. All are welcome. There is nothing fancy yet in the form of structures, signs, paths, and we have a weed problem because the staff is small. But we have some fabulous new plants, from over the world, tropical and temperate.

The Australian shrub *Leptospermum rotundifolium* is in full flower now, six feet high and broad, with rounded small grey leaves crowded densely on the stems, and thousands of lavender-pink flowers over an inch in diameter. The single large specimen in the botanical garden is worth a special trip to see. Flowering is from late March to late June or early July, but the peak is May.

In the Protea family the Australian genus *Grevillea* given good exposure and drainage, are remarkably easy to grow, low in maintenance requirements, rewarding in the flowers, and they are so attractive to hummingbirds that they are often referred to as hummingbird bushes. Two years ago we introduced two Australian cultivars, "Constance" is a large shrub, 10 to 15 feet, leaves elliptic-lanceolate, olive-green, white beneath, stems whitish, flowers orange for twelve months of the year. The hummers fight for territorial rights to this stunning large shrub. It would be a fine addition to Southern California freeway plantings. Flowers are born down inside the shrub, and it is best planted where one can look up at it, on hillsides. "Canberra" has more limited usefulness, as it is rather open and lanky, with needle-like leaves like a conifer which are a bit sharp. But the flowers (April) are a brilliant carmine. Both of these Grevilleas have been available for two years, but are rare.

The newest addition to the select Australian cultivars is *G. juniperina* "Rosea", one of the truly great new plants for California. A graceful upright feathery mass of bright green foliage, needle-leaves (like *G. noelii*), with dense masses of deep rose flowers from December to May. There are some flowers most of the year, but spring is the great show.

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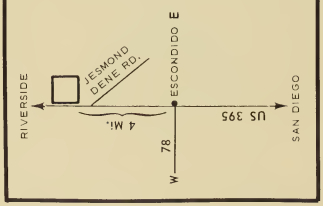

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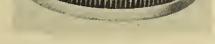

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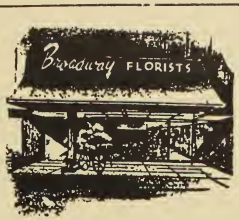

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